

REMARKS

The above-identified application has been carefully reviewed in light of the Examiner's communication mailed December 24, 2002. Submitted herewith is a Request for Extension of Time, and required fee, extending the period for responding to the Examiner's communication to and including April 24, 2003.

Claims 1, 6, 8, 12 to 17, 30, 33 to 36 and 44 have been amended to more clearly set forth and define the present invention, and to address certain of the issues raised by the Examiner under 35 U.S.C. 112, second paragraph. Claims 2, 3, 9, 18 to 20, 31 and 37 to 39 have been canceled, without prejudice. New claims 48 to 55 have been added and are directed to embodiments for which patent protection is sought. Each of these amendments and new claims is fully supported by the present specification.

In view of the above amendments, applicant respectfully requests that the rejection of claim 6 under 35 U.S.C. 112, second paragraph, be withdrawn.

Claims 18 to 20 and 37 to 39 have been rejected under 35 U.S.C. 112, second paragraph.

These claims, that is claims 18 to 20 and 37 to 39, have been canceled, without prejudice. New claims 48 to 55 have been added and are directed to subject matter similar to that of the canceled claims. Applicant submits that these new claims satisfy the requirements of 35 USC 112, second paragraph.

Applicant gratefully acknowledges the Examiner's holding that claims 15 to 17, 21, 35, 36 and 42 include allowable subject matter.

Claims 1 to 14, 16 to 18, 22, 23, 25, 29 and 44 to 47 have been rejected under 35 USC 102(b) as being anticipated by Schuettenberg et al. Applicant traverses this rejection as it pertains to the present claims.

The presently rejected claims are directed to fuel additive compositions and methods for producing fuel additive compositions.

In independent claim 1, a fuel additive composition is provided which comprises a sustained release component and an additive component. The additive component is effective to provide at least one benefit to a fuel when the additive component is released into the fuel. The sustained release component is (1) substantially insoluble in the fuel, and (2) effective to reduce the rate of release of the additive component into the fuel relative to an identical composition without the sustained release component. In addition, the sustained release component comprises at least one polymeric material including polymer repeating units derived from an olefin component having 2 to 12 carbon atoms per molecule.

Claims dependent upon claim 1 provide that the sustained release component is present as a matrix in which the additive component is located (claim 5) or that the sustained release component coats the additive component (claim 6).

In independent claim 8, a fuel additive composition is provided which comprises a matrix material and an additive component. The additive component is located in the matrix material and is effective, when released into a fuel, to provide at least one benefit to the fuel. The matrix component comprises at least one polymeric material and is (1) substantially insoluble in the fuel and (2) effective to reduce the rate of release of the additive component into the fuel relative to an identical composition without the matrix material.

Methods of producing a fuel additive composition are provided in independent claim 44. The methods of claim 44 comprise the steps of combining an additive component with a matrix material to form a mixture. The additive component is effective to provide at least one benefit to a fuel when released into the fuel. The

matrix material comprises at least one polymeric material and is substantially insoluble in the fuel. The methods further comprise forming one or more discrete units of the mixture. The discrete unit or units of the mixture provide a reduced rate of release of the additive component into a fuel relative to an identical unit or units without the matrix material.

Providing a fuel additive composition including a substantially fuel-insoluble sustained release component or matrix material, as recited in the present claims, is advantageous in that there is substantially no need to burn or otherwise remove the sustained release component or matrix material from the fuel. Such a need would exist if the sustained release component or matrix material was soluble and dissolved in the fuel. Using the present substantially fuel-insoluble sustained release components and matrix materials reduces or substantially avoids this additional burden, while providing effective sustained release or slow release of the fuel additive without substantially interfering with the performance of the fuel or of the engine using the fuel.

Moreover, in the present context, substantially fuel-insoluble sustained release components and matrix materials operate or function substantially differently from fuel-soluble sustained release components and matrix materials. With insoluble materials, the fuel additive often diffuses through and out of the sustained release component or matrix material and then convection, diffusion and/or one or more other transport processes disperse the additive throughout the fuel. Diffusion through the insoluble sustained release component or matrix material is often a rate-controlling step. With a soluble sustained release component or matrix material, dissolution of the material is often controlling. Thus, it is clear that fuel-insoluble sustained release components and matrix materials are different and distinct from fuel-soluble sustained release components and matrix materials.

Schuettenberg et al discloses a solid form additive for dispensing fuel additive into fuel is provided by employing a structural agent which is soluble and dispersible in fuel. Schuettenberg et al also discloses pelleting agents soluble in fuel which can be foamed to entrap gas when solidified. Many of the portions of Schuettenberg et al specifically cited by the Examiner disclose, even emphasize the need for the entire composition, including the structural agents and pelleting agents, to be soluble in fuel. Moreover, Schuettenberg et al makes clear that materials which have low solubility in fuel are unsuitable for use. See column 16, lines 24 to 26 of Schuettenberg et al.

Schuettenberg et al does not disclose, teach or suggest the present invention. For example, Schuettenberg et al does not disclose, teach or even suggest any fuel additive compositions or methods for making fuel additive compositions which involve a sustained release component or a matrix material which is substantially insoluble in fuel, as recited in the present claims. The teachings of Schuettenberg et al are substantially deficient in that no sustained release component or matrix material of any type appears to be disclosed, let alone a substantially fuel-insoluble sustained release component or matrix material, as recited in the present claims. Moreover, the fact that Schuettenberg et al discloses, and even requires, only soluble materials to be placed in contact with fuels actually teaches away from the present invention.

In view of the above, applicant submits that the present claims, and in particular claims 1, 4 to 8, 10 to 14, 16, 17, 22, 23, 25 to 29 and 44 to 47, are not anticipated by and are unobvious from and patentable over Schuettenberg et al under 35 U.S.C. 102(b) and 103(a).

Claims 30 to 34, 40, 41 and 43 have been rejected as being anticipated by Hudgens et al under 35 USC 102(b). Applicant traverses this rejection.

Independent claim 30 is directed to a fuel additive assembly comprising a housing including a fuel inlet and a fuel outlet; and an additive composition disposed within the housing and including a fuel additive component and a matrix material comprising at least one polymeric material. The additive component is located in the matrix material and is effective, when released into a fuel, to provide at least one benefit to the fuel. The matrix material is further defined as being (1) substantially insoluble in the fuel in contact with the additive composition and (2) effective to reduce the rate of release of the additive component into the fuel relative to an identical additive composition without the matrix material.

Hudgens et al discloses a coolant filter including an interior chamber filled with coated pellets. Hudgens et al discloses that each coated pellet includes an outer coating which encases a separate supplemental coolant additive composition. Hudgens et al discloses that the coating materials may be insoluble in the coolant or soluble in the coolant.

Hudgens et al does not specifically disclose, teach or suggest the present invention. For example, Hudgens et al does not specifically disclose, teach or even suggest assemblies for releasing a fuel additive into a fuel, as recited in the present claims. In addition, Hudgens et al does not specifically disclose, teach or even suggest an assembly, comprising a housing and a fuel additive composition including a fuel additive component and a substantially fuel insoluble matrix material, as recited in the present claims. The coated pellets of Hudgens et al are clearly distinguished for the present fuel additive composition in which the additive is located in a matrix material.

In short, applicant submits that the teachings of Hudgens et al do not anticipate the present claims and provide no motivation or incentive to one of ordinary skill in the art to use such teachings for the purpose of obtaining the present assemblies for releasing fuel additives into fuels, as recited in the present claims.

In view of the above, applicant submits that the present claims, and in particular, claims 30 to 34, 40, 41 and 43, are not anticipated by and are unobvious from and patentable over Hudgens et al under 35 U.S.C. 102(b) and 103(a).

Applicant further submits that none of the prior art specifically disclose, teach, or suggest fuel additive compositions and additive assemblies as set forth in the new independent claims 48 and 52, respectively. For example, none of the prior art, alone or in any combination, specifically disclose, teach or even suggest a fuel additive composition including a substantially fuel-insoluble matrix material and a fuel additive component in which the matrix material includes an aliphatic acid component and is effective to reduce the rate of additive release, as recited in claims 48 and 52.

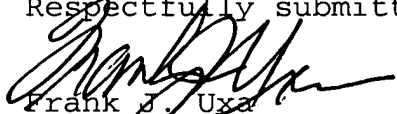
In view of the above, applicant submits that new independent claims 48 and 52 are not anticipated by and are unobvious from and patentable over the prior art under 35 U.S.C. 102(b) and 103(a).

Each of the dependent claims is separately patentable over the prior art. For example, none of the prior art, taken singly or in any combination, disclose, teach or even suggest the present additive compositions, additive assemblies and methods of producing additive compositions including the additional feature or features recited in any of the present dependent claims. Therefore, applicant submits that each of the present claims is separately patentable over the prior art.

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In conclusion, applicant has shown that the present claims satisfy the requirements of 35 U.S.C. 112, second paragraph, and are not anticipated by and are unobvious from and patentable over the prior art under 35 U.S.C. 102 and 103. Therefore, applicant submits that claims 1, 4 to 8, 10 to 17, 21 to 30, 32 to 36 and 40 to 55 are patentable over the prior art, and respectfully requests that the Examiner pass the above-identified application to issuance at an early date. Should any matters remain unresolved, the Examiner is requested to call (collect) applicant's attorney at the telephone number given below.

Respectfully submitted,


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